Energy Markets in Motion

ENERGY STAR 2005 Leadership Meeting
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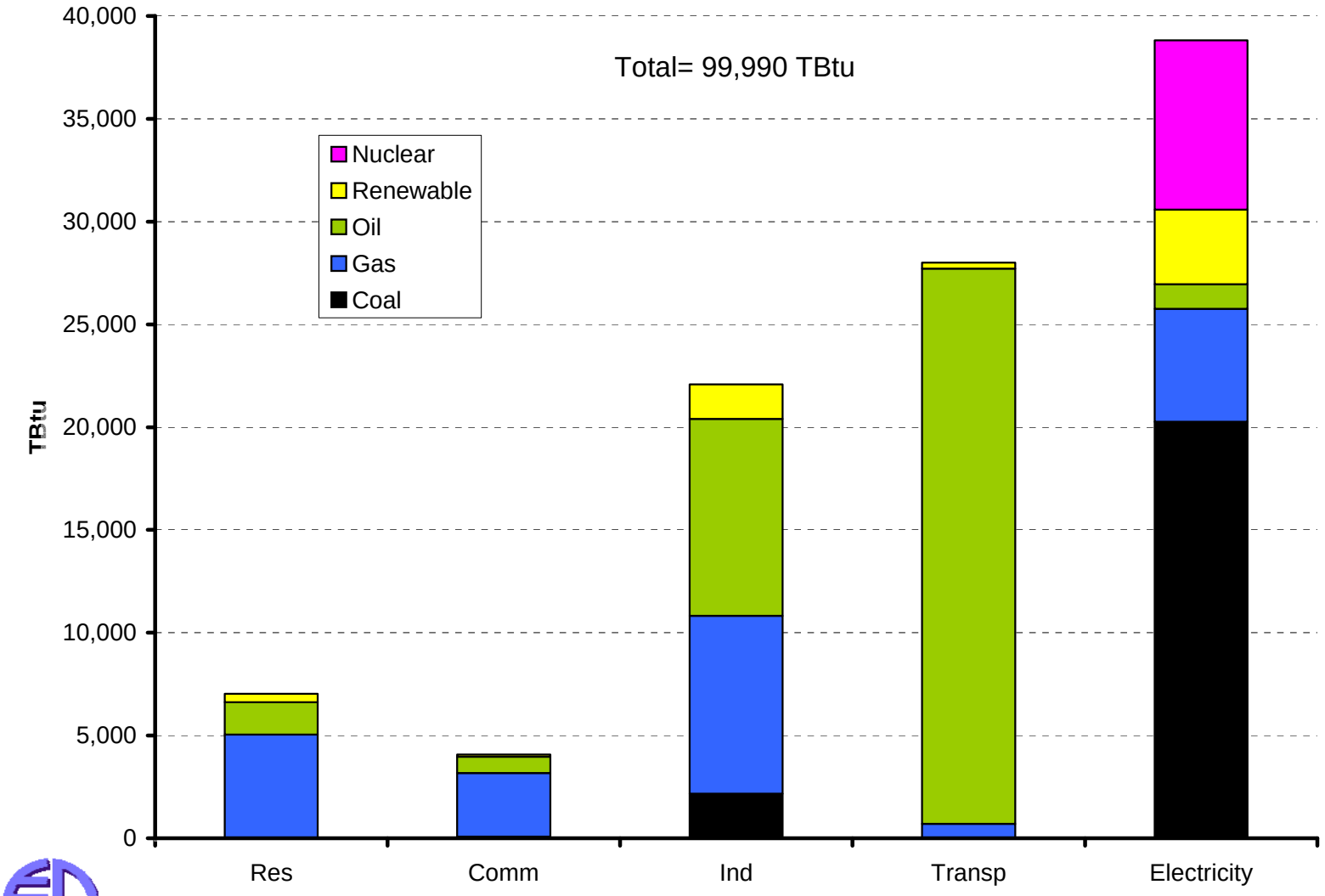
Energy and Environmental Analysis, Inc.
www.eea-inc.com

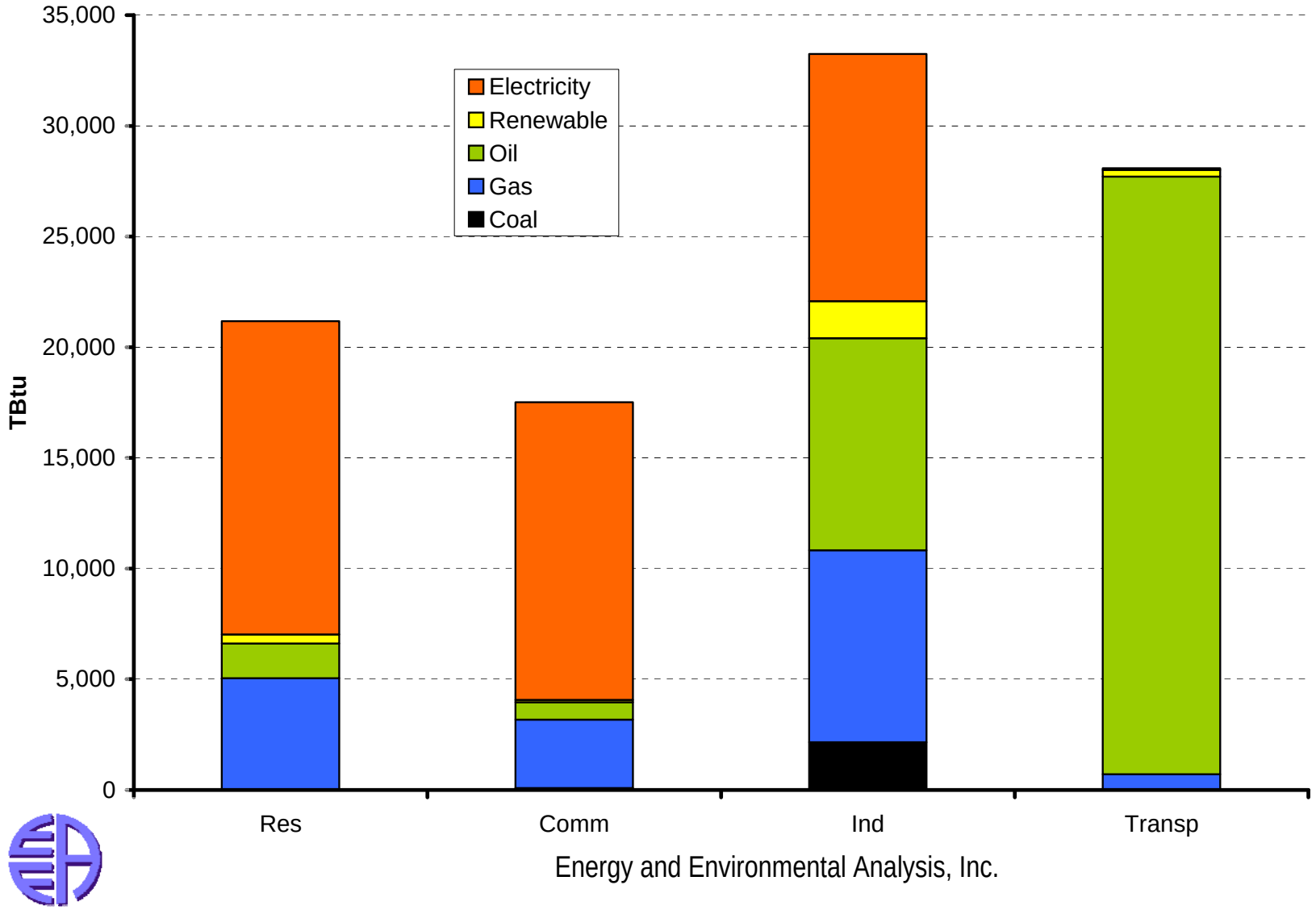
Overview

- U.S. Energy Overview
- Natural Gas Prices
- Electricity Prices
- Conclusions

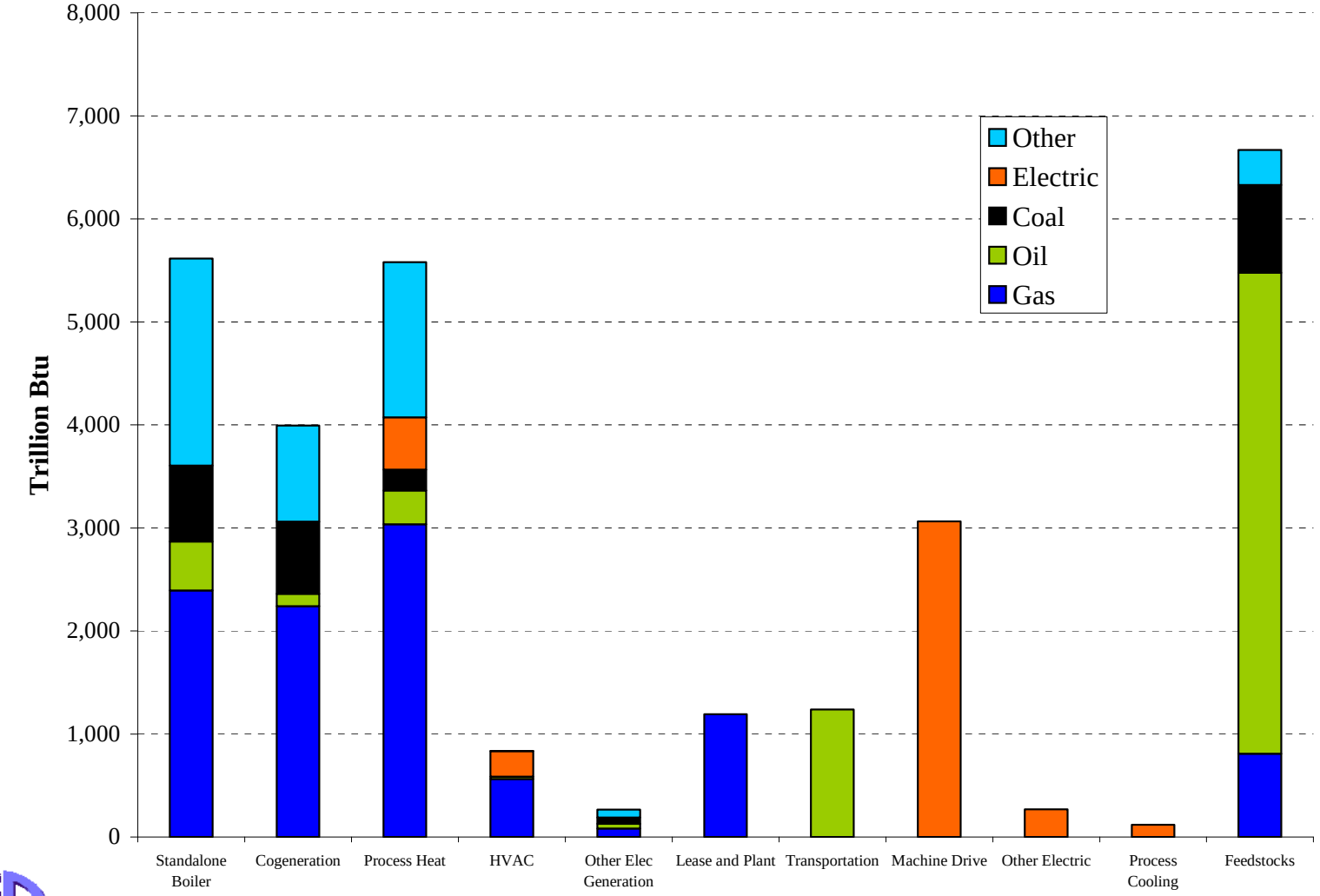
U.S. Primary Energy Consumption
2004



U.S. End-Use Energy Consumption (2004)

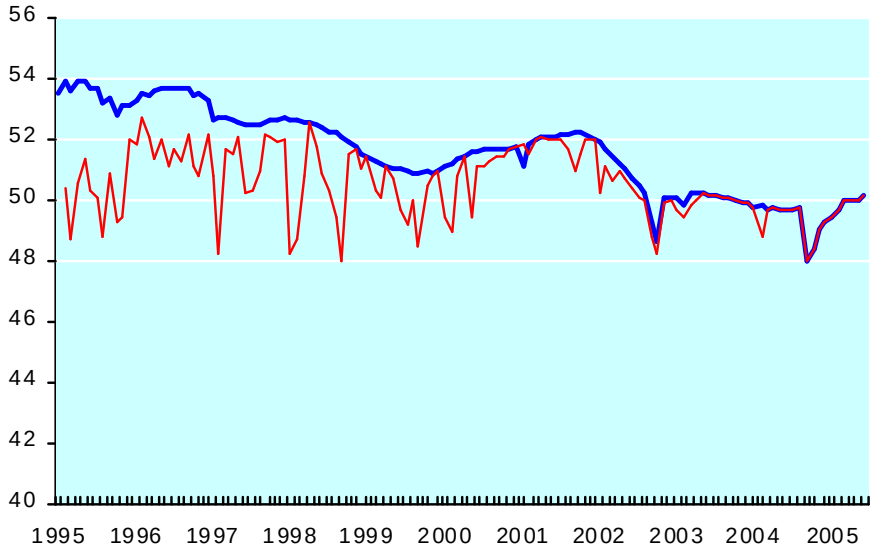


Industrial Energy by End Use (2000)

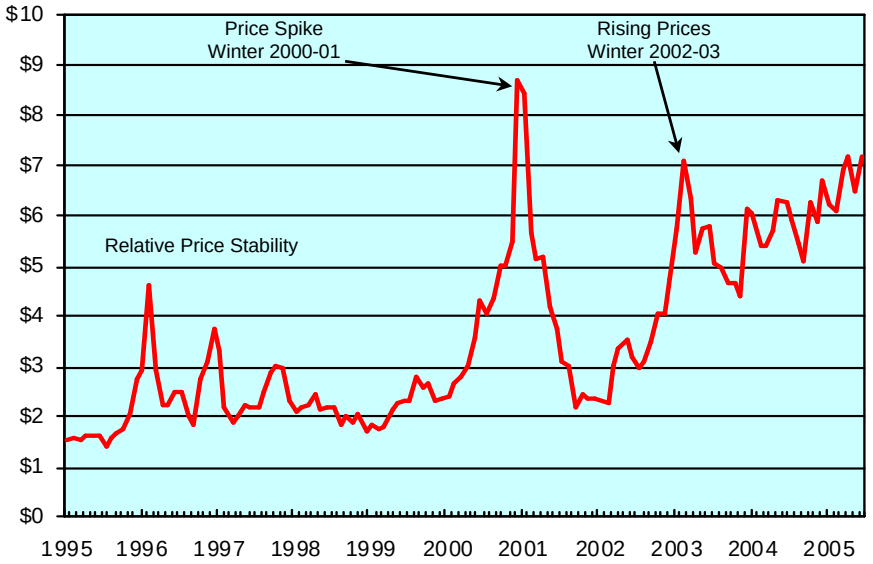


Recent Gas Balance and Prices
(through June, 2005)

Lower-48 Gas Production Versus Deliverability (Bcfd)



Historical Gas Price at Henry Hub ($ per MMBtu)

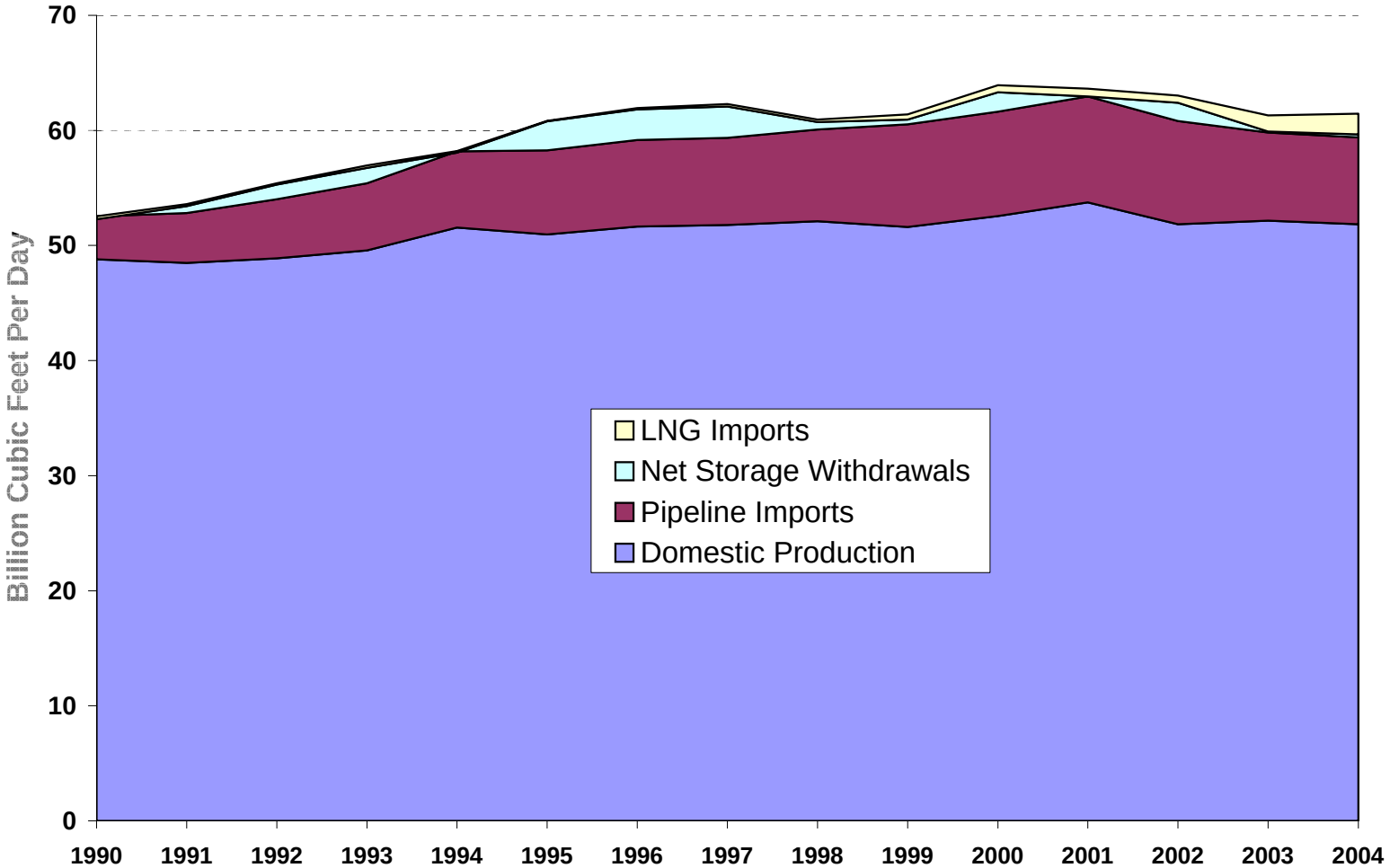


Source: Platts Gas Daily & Energy and Environmental Analysis, Inc.

Divergent trends in gas supply and demand have led to the tight balance between supply and demand, higher gas prices, and increased price volatility.

TIGHT BALANCE EXPECTED TO CONTINUE

U.S. Gas Supply Since 1990



Source: EIA Natural Gas Annual

Obstacles For Supply Growth

- Large Capital Requirements
- Recent Liquidity Crunch
- Investor Recognition of Opportunities
- Price Volatility Creates Uncertainty
- Uncertainty About Future Gas Demand
- Access Restrictions
- Cumbersome Approvals Process
- Environmental and Siting Issues
- Contracting Issues

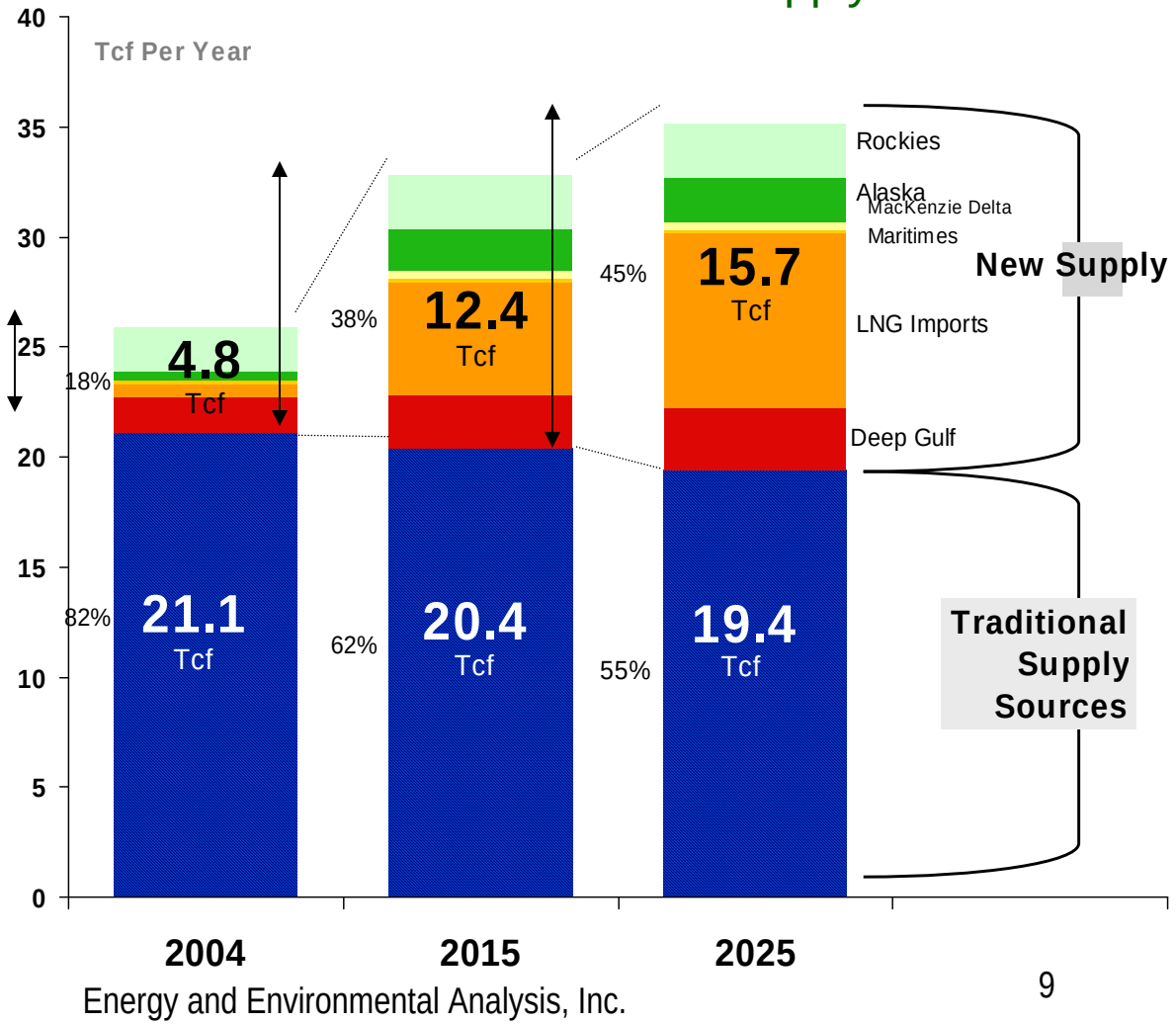
There is much uncertainty about future gas supply development.

Evolution of U.S. Natural Gas Supply

Relying On New Frontiers

- Production from mature producing areas will decline by about 1% per year.
- New frontier supplies will account for 38% and 45% of total U.S. and Canada gas supply in 2015 and 2025, respectively, versus only 18% today.

U.S. & Canada Gas Supply



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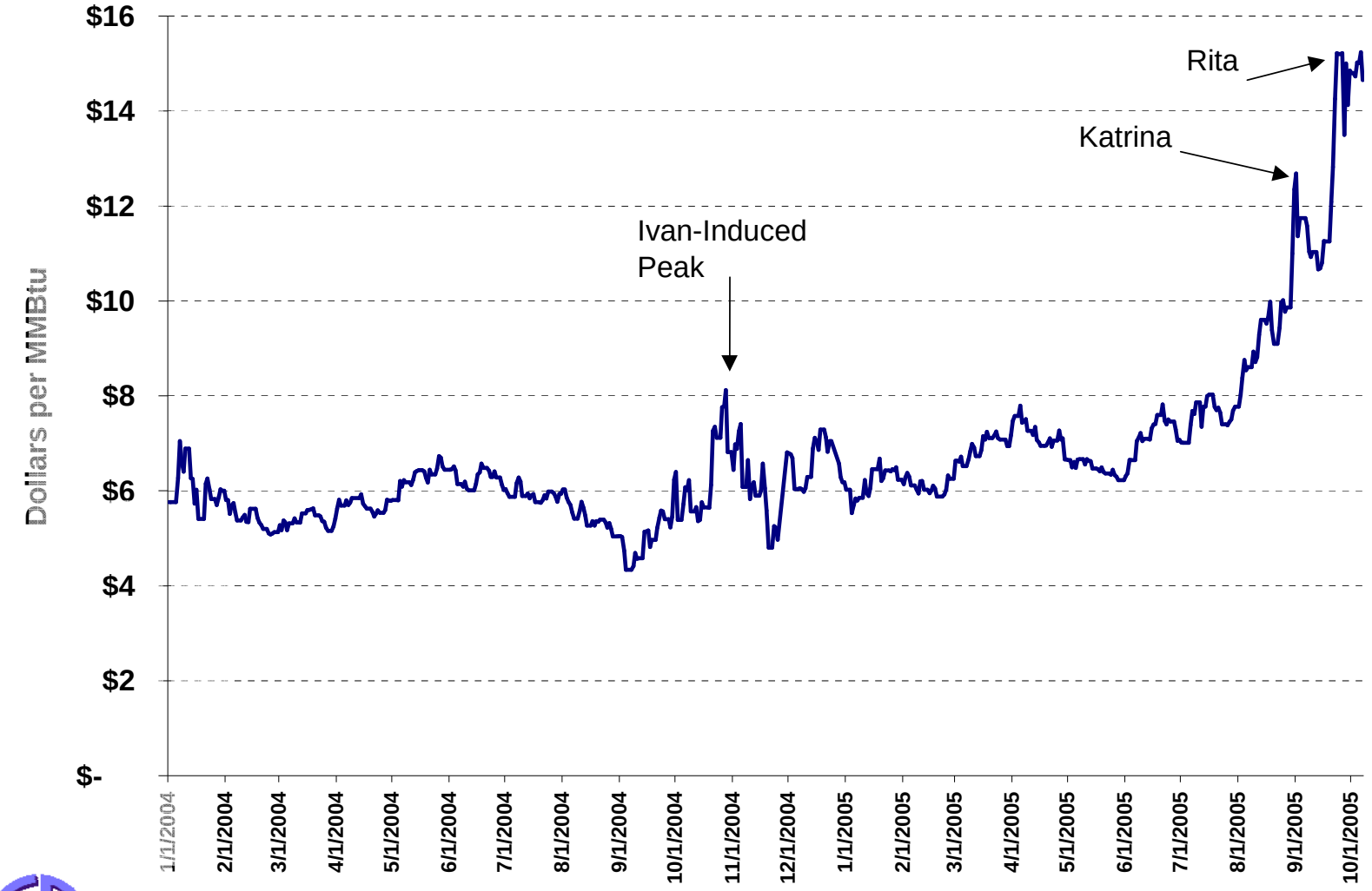
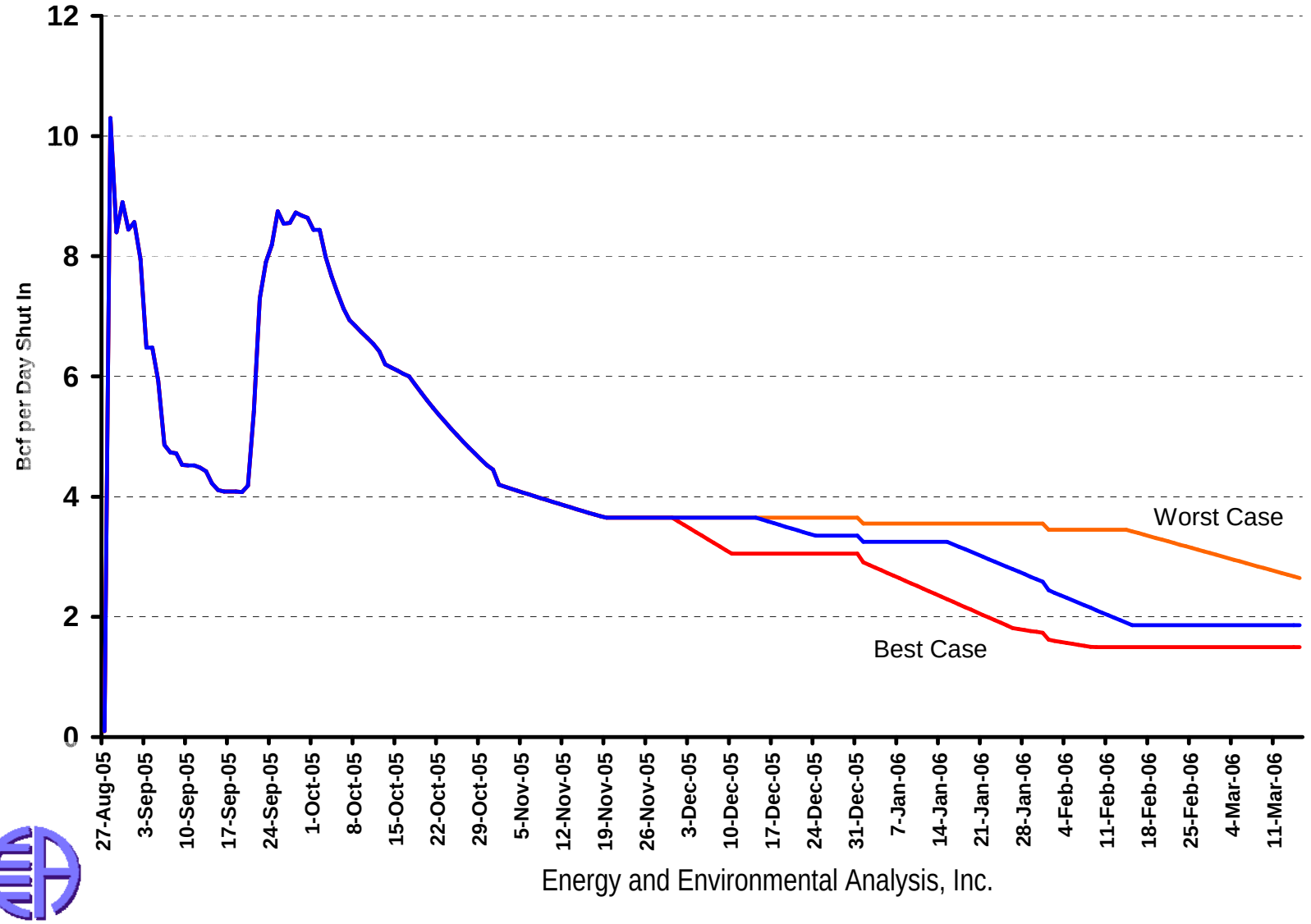
Impact of 2005 Hurricanes

- Shut-in off-shore production.
- Damaged off-shore gathering pipelines.
- Gas processing plants off-line.
- Transmission pipeline operations damaged.
- Storage injections reduced.
- Oil prices increased.
- Some demand offsets.

Hurricane Effects on Gas Prices



EEA Forecast of Total Hurricane Gas Shut-Ins

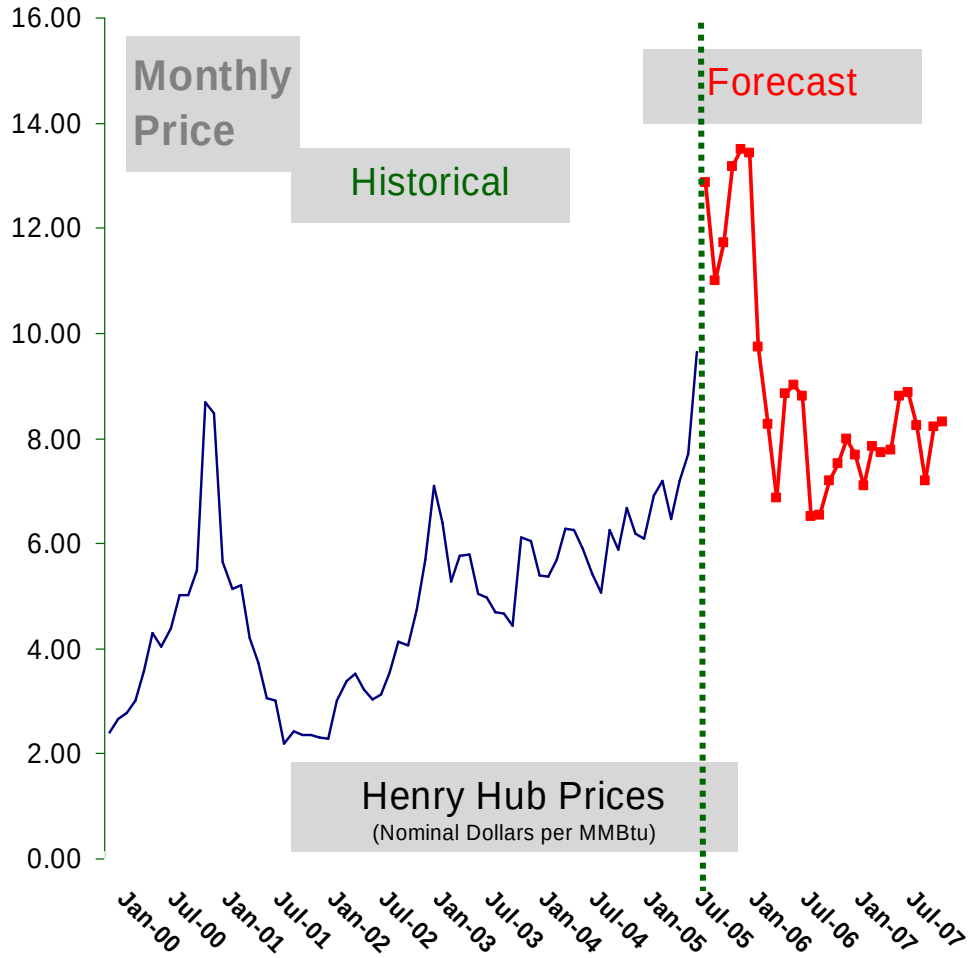


Hurricane Implications

- Production capacity will be recovering but still below normal.
- Storage will be at “normal” levels but slightly lower than otherwise expected.
- Total capacity probably adequate for a normal winter.
- Prices and volatility will be high.
  - Disruptions or below normal weather could trigger further problems.

Short Term Henry Hub Gas Price

Assuming normal weather, Henry Hub prices will average about $13 per MMBtu this winter due to the persistence of the tight supply/ demand balance.

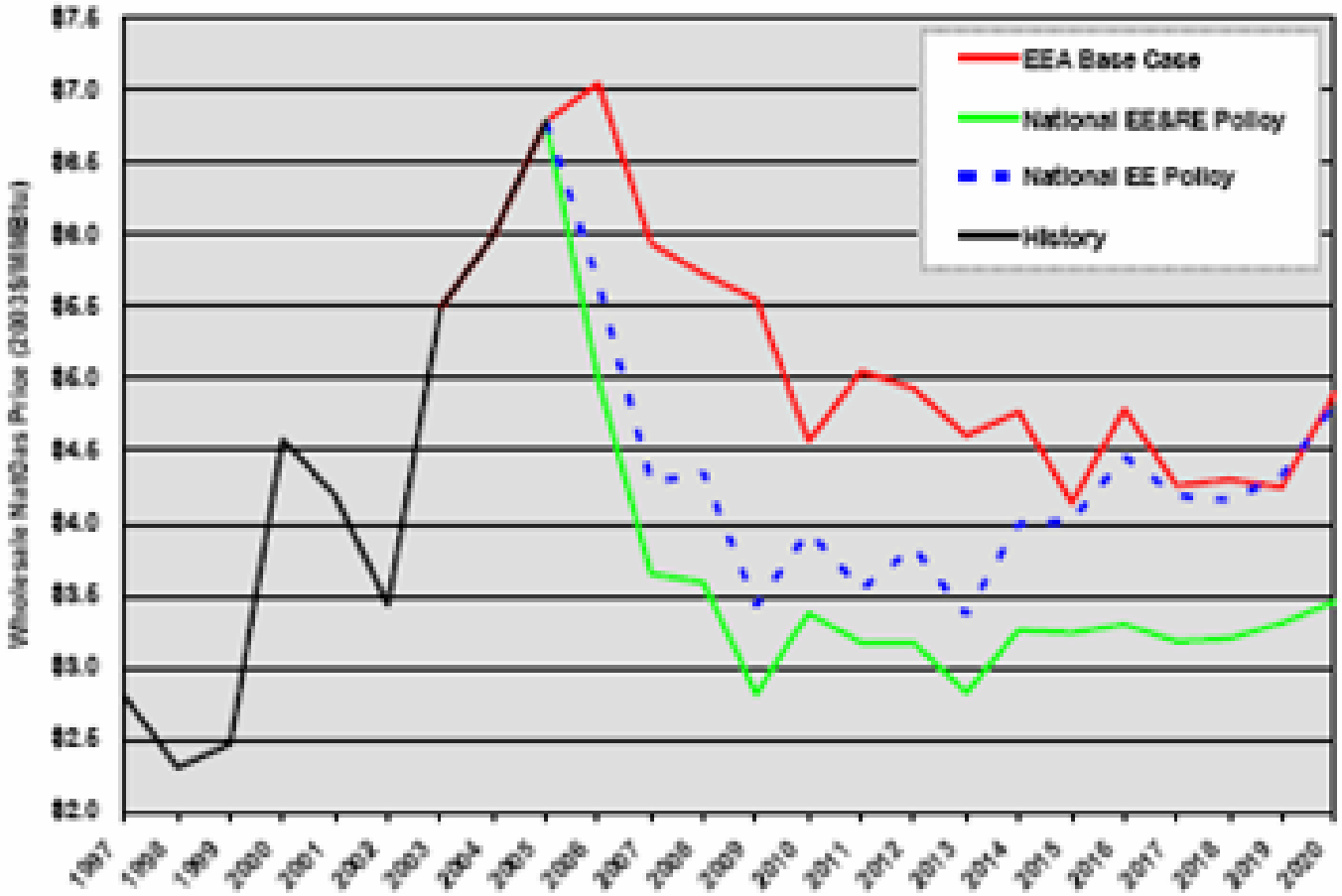


Source of Historical Data: *Platts Gas Daily.*

Longer Term Gas Prices

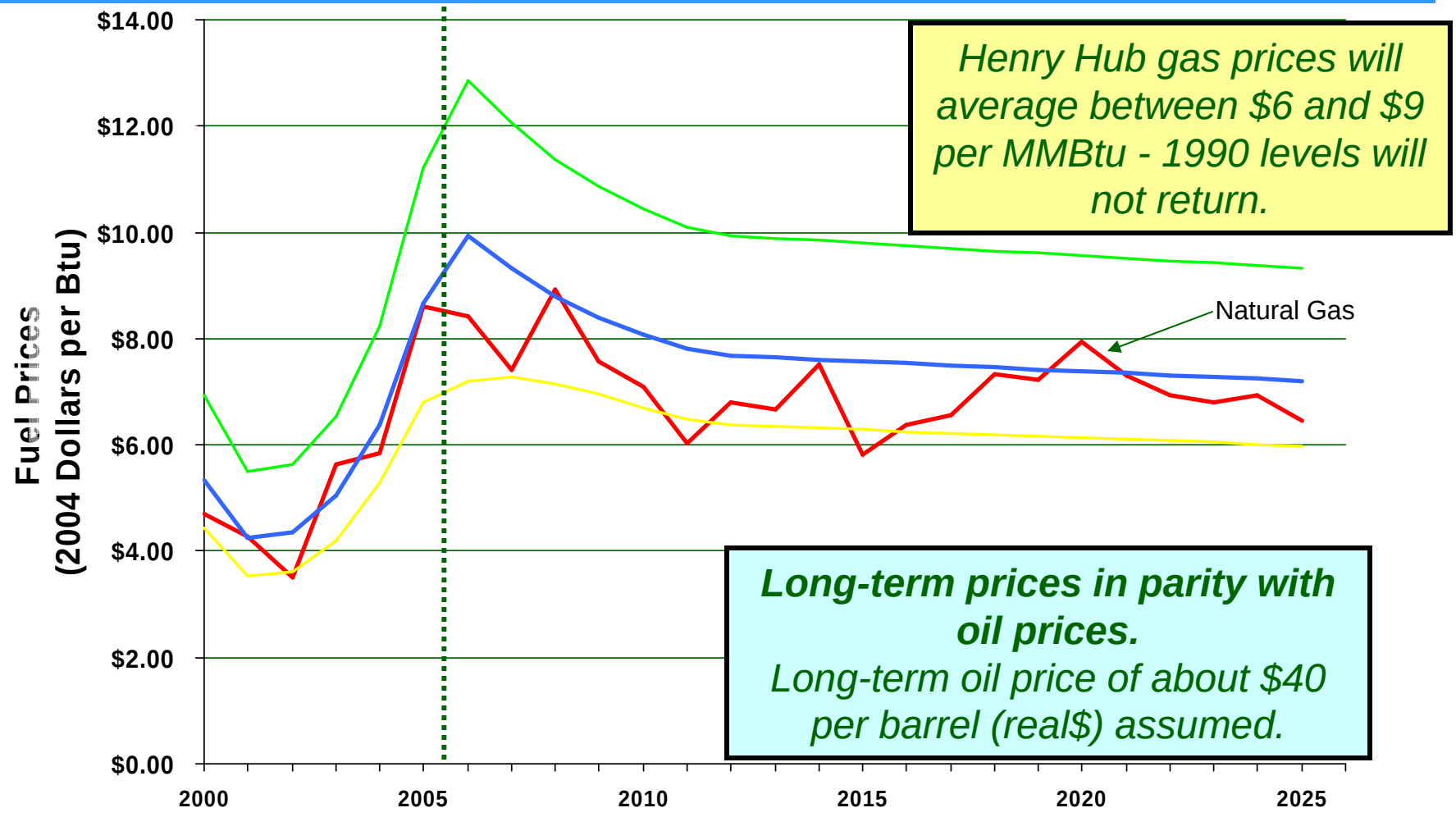
- Major Determinants:
  - Development of new supply, especially LNG.
  - Reduction in demand.
  - World oil prices.
- Local prices may be affected by local gas transmission constraints.
- In no case returning to pre-2001 levels.

EE/RE Can Help Reduce Gas Prices



ACEEE, *Impacts of Energy Efficiency And Renewable Energy On Natural Gas Markets: Updated and Expanded Analysis, April 2005*

Projected Annual Average Henry Hub Gas Price



Sources: Historical data from Platts Gas Daily, Projection by Energy and Environmental Analysis, Inc.

Electricity Price Trends

- Cost of generation - dependent on generation mix.
- Effect on retail price - dependent on status of utility regulation.
- Local electric transmission constraints are on top of commodity cost.

Electricity Commodity Cost

- Natural gas prices have been sharply higher.
- Coal costs are higher than historical but still much lower than gas.
- Non-fossil costs relatively unchanged.
- Net effect depends on local fuel mix.

Effect on Retail Prices

- Under conventional rate regulation, retail rates are based on average cost.
  - Impact of fuel cost reflected in monthly adder or frequent rate updates.
- In restructured markets, utilities pay marginal cost for electricity.
  - Greatly magnifies the effect of higher wholesale cost component.
- Increasingly, utilities are passing these higher, more volatile costs to consumers.

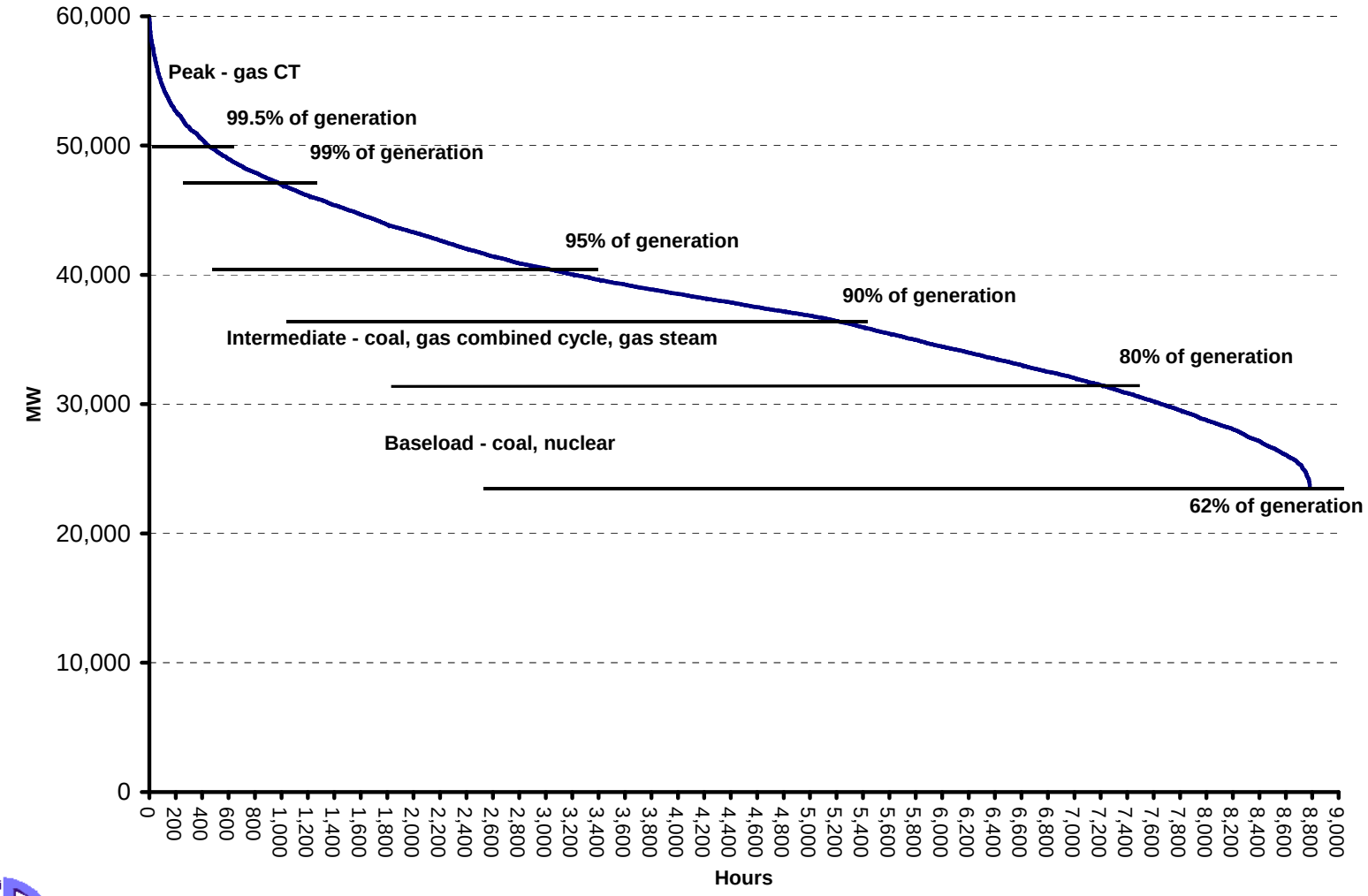
Historic Electricity Prices

- Regulated electric rates, based on average cost of utility generation.
- Majority of electricity generated by low-cost nuclear, coal, hydro assets.
  - Energy cost $25-$35/MWh (2.5 - 3.5 cents/kWh).
- Large electric user rates relatively low - <$0.05/kWh ($50/MWh).
  - Retail rates higher than wholesale energy cost.

Restructured Electric Prices

- Price based on the marginal unit at each hour.
- Marginal units in many areas are gas-fired units for much of the year, even where coal is the primary energy source.
- In this case, gas and electricity prices are linked.

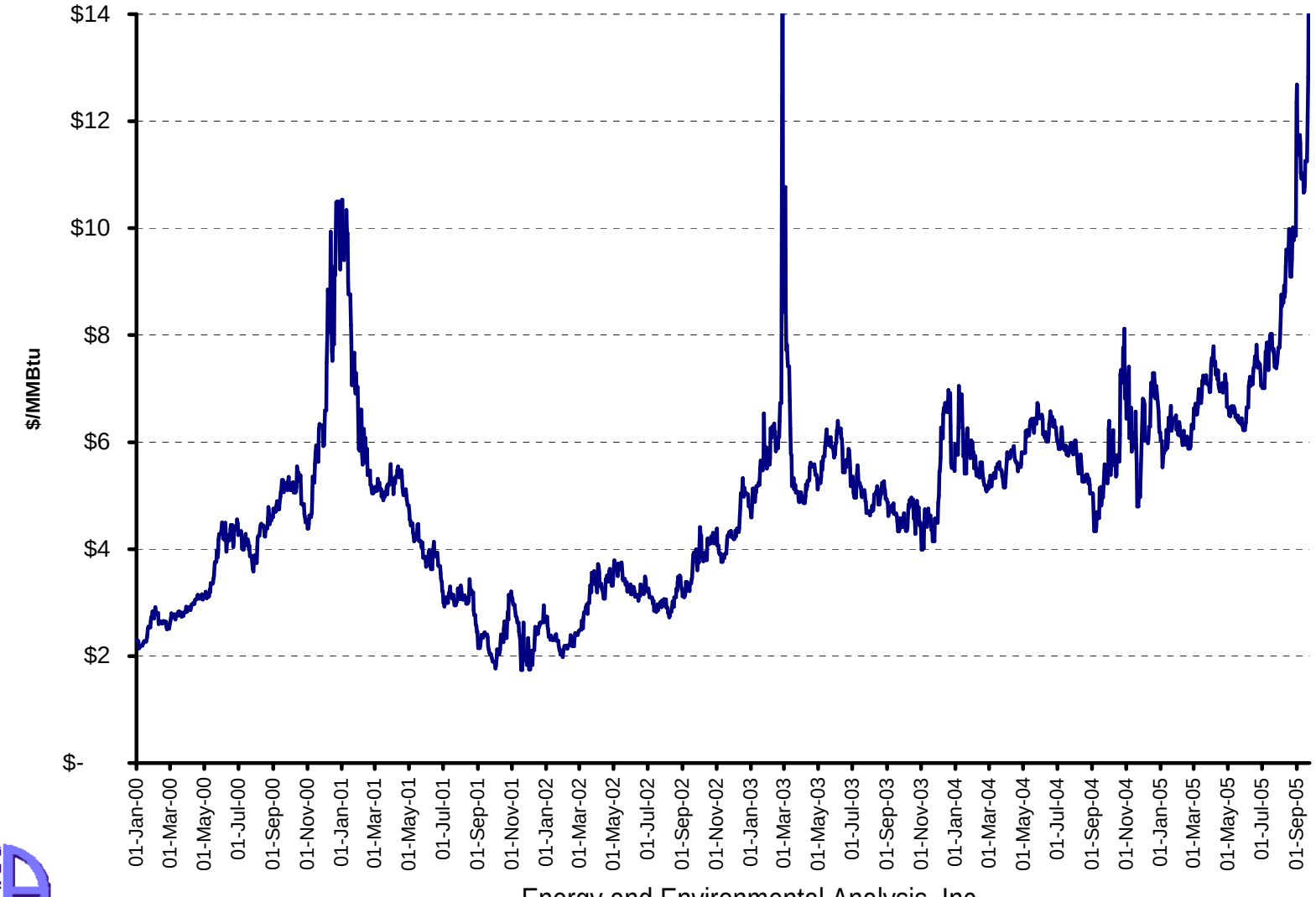
Electric Load Curve Implications



Electric Markets Today

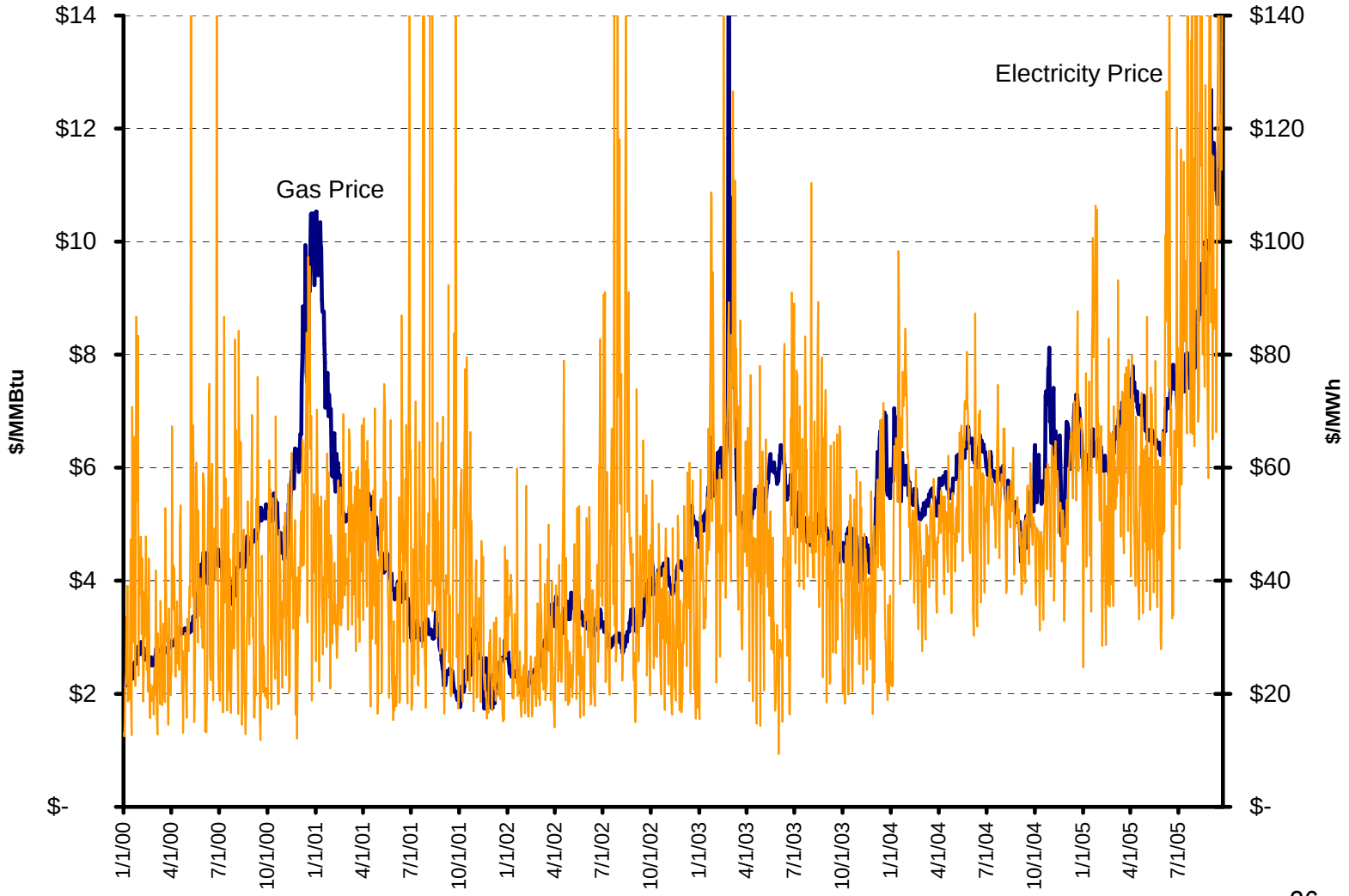
- Price caps are coming off in restructured markets.
- Utilities moving to market-based rates for large customers.
- Electricity prices will track gas prices.
- Electricity prices are more than the energy component.

Henry Hub Gas Price
1/1/00 - 9/30/05



HH Gas Price vs PJM Electricity Price

1/1/00 - 9/30/05



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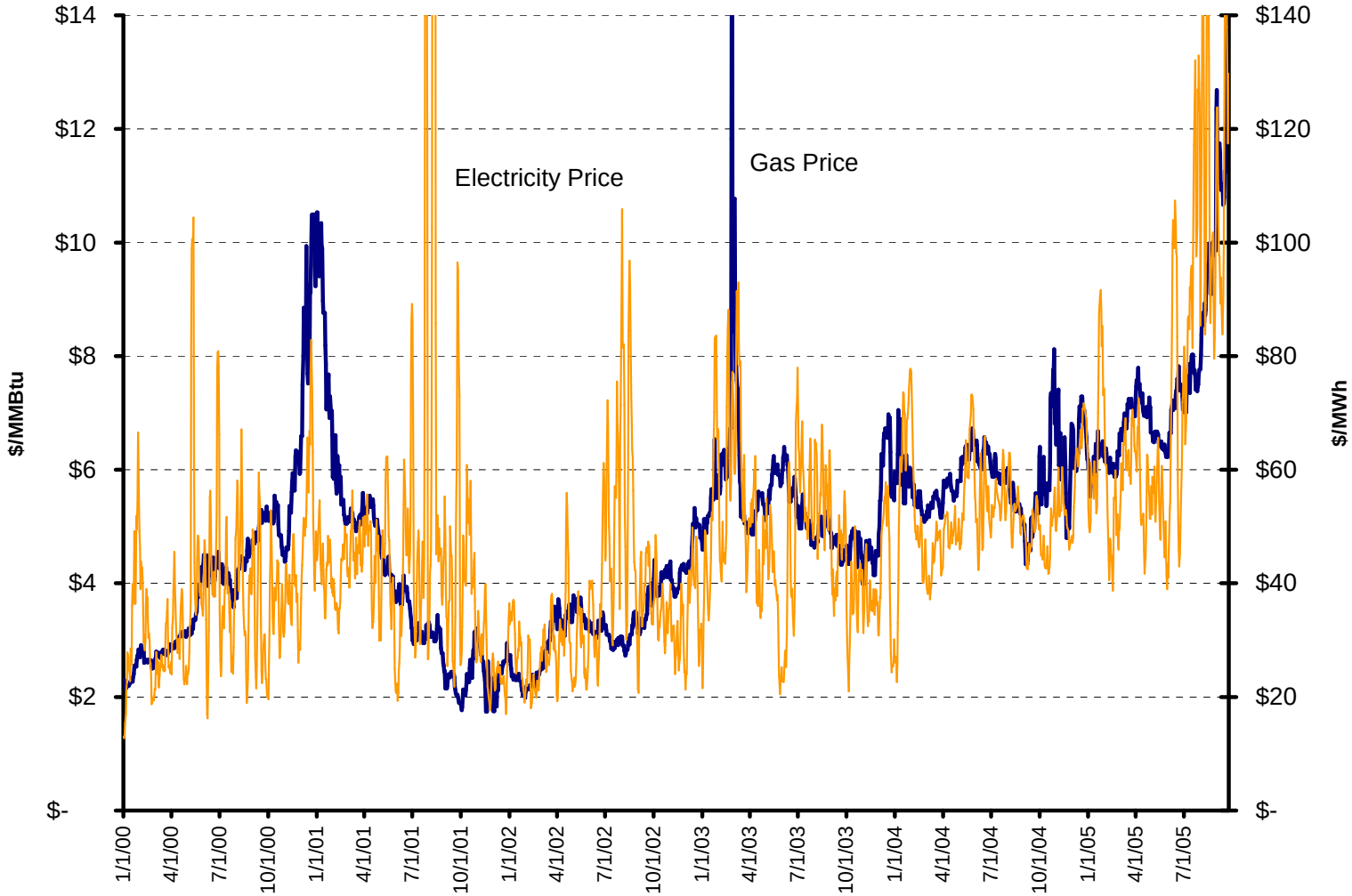

Conclusions

- Gas prices will continue to be over $6.
  - Short-term hurricane effect.
  - Longer-term dependence on supply development and world oil-prices.
- Electricity prices will increasingly reflect higher/more volatile fossil-energy prices.
  - More-so in restructured areas.
- Efficiency and renewables will continue to be highly cost-effective and the best short-term response to higher prices.